ABSTRACT OF THE DISCLOSURE

An underlying insulting film of silicon oxide, a gate insulating film of hafnium oxide, a gate electrode of polysilicon, and side walls of silicon oxide are formed above an element formation region of a semiconductor substrate. In the upper portion of the element formation region of the semiconductor substrate, source and drain areas and extension areas are formed by implantations of respective types. Thereafter, the scan speed of the semiconductor substrate and the pulse interval and the peak power of laser beam are adjusted to irradiate only the vicinity of the surface of the semiconductor substrate with laser beam for 0.1 second so that the vicinity of the surface of the semiconductor substrate has a temperature of 1150 to 1250°C. Thus, heat treatments for the gate insulating film and the source and drain areas are performed.